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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/565,652	01/24/2006	Takeshi Iwasaki	284808US0PCT	6145
22850 7590 03/31/2008 OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314				
EXAMINER				
TESKIN, FRED M				
ART UNIT		PAPER NUMBER		
1796				
NOTIFICATION DATE		DELIVERY MODE		
03/31/2008		ELECTRONIC		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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### Office Action Summary

**Application No.**

10/565,652

**Applicant(s)**

IWASAKI ET AL.

**Examiner**

Fred M. Teskin

**Art Unit**

1796

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 02 January 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-5, 9-13 is/are allowed.
- 6) ☒ Claim(s) 6-8 and 14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-8508)
- Paper No(s)/Mail Date 20080225
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

This Office action is responsive to the reply filed on January 2, 2008. Claims 1-14 are currently pending and under examination.

Applicant's arguments, see pages 9-13, filed January 2, 2008, with respect to the rejection of claims 1-3 over Pysall et al and the rejection of claims 6 and 8 over Fouillet et al have been fully considered and are persuasive. Therefore, these rejections have been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of newly discovered prior art to Bergh et al.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 6 and 7 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over US 2002/0170976 (Bergh).

Bergh has disclosed an apparatus for investigating and/or optimizing reaction temperature – simultaneously and independently - in relatively closely-packed, highly parallel reactors; in particular, the temperature of four or more reactors is simultaneously and independently controlled while thermal isolation between the reactors is accomplished by a fluid-based heat exchange fluid with an external heat sink. See Bergh at [0005] and [0023] and Figs. 1A, 2A and 2B. Figs. 2A - 2B show an apparatus wherein thermal isolation between plural reactor tubes (4610) is achieved by using a fluid-based heat exchange fluid to cool the inter-reactor volume within the

reactor frame. Referring to Fig. 2A, a cooling medium is fed into the reactor module substantially at the mid-section thereof, in a first, primary heat exchange zone, contacts each of the reactor tubes substantially at its center, then generally splits and flows towards each end of the reactors. As depicted in Fig. 2B, the flow pattern of the cooling medium within the reactor frame reflects a *parallel* arrangement of the heat exchange zones with the reactor tubes, in compliance with present claim 6. Furthermore, Bergh states that the fluid-based heat exchanger can also have *multiple zones*, with *independent* heat-exchange fluid feeds associated with *each* zone (see [0025]). Thus, as to claim 7, it is contended that Bergh's embodiment of multiple heat exchange zones and associated, independent heat-exchange feeds corresponds to and fully meets the claimed feature of "the jacket being divided into a plurality of jacket sections in the longitudinal direction of the round tubes, and the flow of temperature-regulating liquid in each section can be controlled independently."

Thus, except for inner diameter of the reaction tubes, Bergh is found to describe all the elements of the instantly claimed microreactor, arranged in the manner claimed. However, as to this claimed parameter, Bergh states, "[T]he elongated reaction vessel (70) is preferably a stainless steel, ceramic, or quartz tube, and without limitation, preferably has a diameter of from about 1 mm to about 20 mm, more preferably from about 2 mm to about 10 mm ..." ([0037], fifth sentence). It is contended that the explicit disclosure of a reaction tube having a diameter of "about 1mm" (for an apparatus that otherwise meets the claim limitations) represents a discrete embodiment of the parallel reactor disclosed by Bergh and, thus, an anticipation of claims 6 and 7.

See, *Ex parte Lee*, 31 USPQ 2d 1105 (BPAI 1993). Alternatively, since the reactor of Bergh and the microreactors encompassed by claims 6 and 7 appear identical in all other respects, the substantial overlap in the disclosed and claimed ranges would have rendered selection of the claimed diameter for the reaction tubes of Bergh *prima facie* obvious to one having ordinary skill in the art at the time the invention was made. In cases involving overlapping ranges, it has consistently been held that even a slight overlap in range establishes a *prima facie* case of obviousness; see, e.g., *In re Woodruff*, 16 USPQ2d 1936 (claimed invention rendered obvious by prior art reference whose disclosed range ("about 1-5% carbon monoxide") abutted the claimed range ("more than 5% to about 25%" carbon monoxide)).

Claim 8 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bergh.

Bergh, as discussed above, differs from claims 8 and 14 in failing to explicitly disclose a microreactor wherein the round tubes are detachably attached to a main body of the jacket. However, it is submitted that those of ordinary skill in the art would have perceived practical benefits in making the reaction tubes detachable from the reactor module of Bergh (which includes heat exchange zones or channels defining a jacket as claimed), at least in terms of facilitating access to and/or replacement of individual tubes. Motivated by such practical considerations, it would have been obvious to one of ordinary skill in the art at the time of applicants' invention to modify the

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parallel reactor of Bergh by making the reaction tubes detachably attached to the reactor module, in compliance with claims 8 and 14.

Claims 1-5 and 9-13 are allowable over the prior art of record.

In view of the new grounds of rejection, this action is made non-final.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner F. M. Teskin whose telephone number is (571) 272-1116. The examiner can normally be reached on Monday through Thursday from 7:00 AM - 4:30 PM, and can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached on (571) 272-1114. The appropriate fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Fred M Teskin/

Primary Examiner, Art Unit 1796